**Pranup Chhetri**

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**Professional Summary**

MSc Artificial Intelligence graduate with distinction and award-winning research experience in autonomous systems, specialising in deep learning, graph neural networks, and social navigation. Strong foundation in machine learning, multi-agent systems, and reinforcement learning principles, with practical exposure to real-world deployment. Demonstrated ability to conduct independent and collaborative, high-quality research and implement robust AI pipelines using Python, PyTorch, and simulation tools. Research interests lie in Autonomous Vehicles, Multi-Agent Systems and Machine and Deep Learning.

**Skills**

* *Programming Languages:* Python, C/C++, JavaScript
* *AI & Autonomous Systems:* Deep Learning, Predictive Modelling, Computer Vision, Reinforcement Learning (RLHF), Multi-Agent Systems, PDDL, Autonomous Navigation
* *Data Engineering & Analytics:* ETL, Data Integration, Preprocessing, Survey Design, Visualisation, SQL, JSON
* *Libraries & Frameworks:* PyTorch, Sklearn, OpenCV, Pandas, Numpy, Streamlit, Seaborn, Pyperplan, Webots Simulation
* *DevOps & Tools:* Docker, Jenkins, Git, Linux, JIRA, Trello
* *APIs & Platforms:* Gemini API, OpenAI API, Google Cloud Vision

**Professional Experience**

**Freelance AI Trainer and Prompt Engineer Birmingham**

*DataAnnotation Tech*April 2025 to Present

* Conducted high-quality evaluations of upcoming large language models for STEM, Python Programming and Data Analysis tasks.
* Created fine-grained criteria for model evaluation and provided objective feedback for Reinforcement Learning with Human Feedback (RLHF) pipelines.
* Evaluated the correctness of claims via extensive research of the relevant domain to evaluate model truthfulness.
* Effectively managed a self-directed work schedule, balancing multiple projects and personal commitments to consistently meet deadlines.

**MSc Dissertation Research Birmingham**

*Social Navigation using GNNs (Research Project)* Aug 2024 to Feb 2025

* Developed a novel spatio-temporal GNN metric to evaluate autonomous robot navigation using human-rated data.
* Used PyTorch Geometric Temporal (PyGT) for implementing S-TGNN models and TGCN layers.
* Designed a full ETL pipeline to extract pose features and navigation metrics into dynamic graph structures.
* Built a baseline RNN model using traditional metrics for comparative evaluation.
* Analysed participant ratings with metrics like Cohen’s Kappa to ensure inter-rater reliability.
* Collaborated with international researchers to validate model generalisability across varied social navigation settings

**Coding Teacher Birmingham**

*CodeCamp UK* Nov 2024 to April 2025

* Delivered engaging coding lessons to children aged 6 to 12 across multiple schools in Birmingham, ensuring active participation and fostering an interest in technology.
* Led sessions as a head teacher, managing classrooms of 20+ students, and achieving timely completion of all modules every term.

**Project Engineer Chennai, India**

*Wipro Technologies* Jun 2022 - Sept 2023

* Tested and optimised software performance for Nokia’s Optical Communication Devices, including the 1830 PSS and various network switches, significantly enhancing network reliability and user experience.
* Designed and implemented automated testing pipelines for network cards, simulating real-world conditions such as signal disruptions and system reboots to ensure high availability and fault tolerance.
* Developed custom automation tools to support software version migration, including a Python utility that updated configuration variables across multiple files, improving engineering efficiency by up to 80%.
* Actively participated in Agile ceremonies, including weekly Scrum meetings, to maintain alignment, track progress, and contribute to continuous delivery goals.
* Collaborated closely with cross-functional teams from Wipro and Nokia to ensure end-to-end test coverage, prompt bug resolution, and successful product validation.

**Education**

**Master of Science** in Artificial Intelligence

**Aston University, Birmingham, UK.** January 2025

* Achieved distinctions in all taught modules and research modules.
* Recipient of Departmental Prizes:
  + Outstanding MSc Project
  + Outstanding Performance in MSc Artificial Intelligence

**Bachelor of Engineering** in Computer Science

**Sambhram Institute of Technology, Bangalore, India.** 2018-2022

* Achieved First Class with Distinction and a cumulative GPA of 8.62.

**A-level Equivalent in Science (CBSE)**

**Army School, Bengdubi, India.** 2018

**Projects**

**Literature Review: High-Skill Game-Playing Agents and Multi-Agent Systems**

* Conducted a comprehensive analysis of decentralised multi-agent systems in competitive environments
* Investigated key architectural designs for autonomous coordination, including:
  + League training systems for competitive agent deployment
  + Team-based reward functions for collaborative decision-making
  + Long-term strategic planning using horizon-based approaches
* Analysed cross-domain applications of autonomous systems, including real-world deployment challenges
* Evaluated ethical considerations and practical constraints in autonomous system implementation

**PDDL-based Autonomous Robot Navigation**

* Developed code for an autonomous robot in a dynamic environment, able to travel to various goals assigned to it using keyboard input in a Webots environment.
* Applied Planning Domain Definition Language (PDDL) to define the problem domain and the possible solutions for fast and efficient global navigation.
* Implemented a hierarchical planning architecture combining breadth-first search for high-level path planning with reactive control for real-time obstacle avoidance and waypoint navigation.
* Utilised a GPS module for local navigation and LiDAR for dynamic obstacle avoidance with 100% accuracy.

**Classification Model for UCI Bank Marketing Dataset** 2024

* Built a weighted Random UnderSampler Boosted classification model, increasing accuracy in predicting sales outcomes, and helping banks better target their marketing efforts.
* Analysed, preprocessed, and identified the data characteristics and experimented with various models on the dataset.
* Implemented a weighted Random UnderSampler (RUS) boosted classification model on a highly imbalanced dataset for product sales for a bank, yielding an Area Under Curve of 0.86.

**Self-Driving Vehicle** 2024

* Developed code for a self-driving car that follows traffic lights in a webbot simulation using Python and OpenCV.
* Applied multiple colour and depth masks for separating contours of traffic signals from other similar signs with 90% accuracy.

**PDDL-based Autonomous Robot Navigation** 2024

* Developed code for an autonomous robot in a dynamic environment, able to travel to various goals assigned to it using keyboard input.
* Applied Planning Domain Definition Language (PDDL) to define the problem domain and the possible solutions for fast and efficient global navigation.
* Utilised a GPS module for local navigation and LiDAR for dynamic obstacle avoidance with 100% accuracy.

**Autonomous Cube grasping UR5e Robot arm** 2024

* Developed code for a UR5e robot arm that can identify randomly placed cubes on a table, pick them up and drop them into a crate.
* Implemented Inverse and Forward Kinematics for robot arm movement and utilised OpenCV for identifying cubes using colour-based contours and depth images.

**PDF Data extraction using LangChain** 2024

* Developed an automated PDF data extraction system using LangChain and open-source Large Language Models (deepseek-r1:7b, llama-3.1:8b) to process and analyse technical documentation, implementing vector-based semantic search with FAISS for accurate information retrieval
* Engineered a robust document processing pipeline utilising HuggingFace embeddings and recursive text splitting algorithms, optimising chunk sizes and overlap for enhanced context preservation
* Built a flexible extraction framework capable of identifying and categorising multiple product types (batteries, inverters) from technical documents, implementing structured JSON output for seamless data integration.